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ROBERT'S MLOTKOWSKI SAFRAN & COLE, P.C.

Intellectual Property Department

P.O. Box 10064

MCLEAN, VA 22102-8064

EXAMINER

MCCLELLAND, KIMBERLY KEIL

ART UNIT

PAPER NUMBER

1791

NOTIFICATION DATE

DELIVERY MODE

04/19/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

lgallaugh@rmsclaw.com

dbeltran@rmsclaw.com

rescobar@rmsclaw.com

Office Action Summary

Application No.

10/532,815

Applicant(s)

KUBO ET AL.

Examiner

KIMBERLY K. MCCLELLAND

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1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/02/10.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/02/10 has been entered.

Response to Amendment

2. Applicant is reminded they need to explicitly point out where support for all the newly claimed features comes from as required by MPEP 714.02 and 2163.06. See 37 CFR 1.111.

Claim Objections

3. Claim 4 objected to because of the following informalities: The term "boinding" appears to be a typo, and should be corrected to "bonding". Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-7 and 9-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The newly added claim language in independent claims 1, 12, and 18 of maintaining a "gathering a loose part of the adhesive sheet" is new matter. Applicant has not specified where support for this amendment may be found. The specification as originally filed does not disclose a gathering step. The drawings do not disclose this feature. There is no indication anywhere in the current application that the loose part of the adhesive sheet is "gathered". Consequently, applicant's amendment introduces new matter into the current application. Clarification is required. Dependent claims 2-7, 9-11, 13-17, and 19-20 are rejected due to dependency on independent claims 1, 12, and 18.
6. As to claim 3, the limitation of "a looped tube" appears to be new matter. Applicant has not specified where support for this amendment may be found. The specification as originally filed does not disclose a gathering step. The drawings do not disclose this feature. Clarification is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,344,402 to Sekiya in view of U.S. Patent No. 3,936,204 to Jennrich.

9. With respect to claim 1, Sekiya discloses a method of dicing a workpiece, including a conveying step of conveying said plate-like article (W) together with said chuck stage (21) of said dicing device to a different area in said dicing device without being detached from a chuck stage after the dicing of said plate-like article; an expanding step of expanding said adhesive sheet so as to produce spacings between individual chips with said plate-like article being mounted to said frame (F) in a wafer spreader of an expansion device; and an expansion maintaining step of maintaining in a maximally expanded state of said adhesive sheet with the spacings between individual chips unchanged and with said plate-like article remaining mounted to said frame after said expanding step by gathering the expanded sheet formed near an outer periphery of the adhesive sheet by the expansion of the adhesive sheet to form an annular protrusion surrounding the chips by nipping and securing the annular protrusion, and conveying said plate-like article from the wafer spreader of said expansion station together with said frame with the increased spacings between said chips being maintained (column 3, line 55-column 4, lines 43; See Figures 8-9). Sekiya does not specifically disclose forming a loose part of the adhesive sheet.

10. Jennrich discloses a tape clamp, including forming a loose part in the adhesive sheet (See Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the loose part clamping taught by Jennrich with the expansion step on the method of Sekiya. The motivation would have been to prevent tape failure (column 1, lines 45-47).

11. As to claim 5, Sekiya discloses a method of dicing a workpiece including expanding step is performed with said plate-like article being placed on said chuck stage of said dicing device, and wherein the expanding step includes a step of temporarily maintaining the expanded state of said adhesive sheet on said chuck by holding the adhesive sheet (column 3, line 55-column 4, line 43).

12. As to claim 6, Sekiya discloses the expanding step is performed by said expansion device in a dicing area of said dicing device after the dicing of said plate-like article, and said plate-like article with the fully expanded state of said adhesive sheet being temporarily maintained is conveyed to a different area in said dicing device together with said chuck stage, and said expansion maintaining step is performed in said different area (column 3, line 55-column 4, line 43).

13. As to claim 7, Sekiya discloses expanding step and said expansion maintaining step are performed in said different area in said dicing device column 3, line 55-column 4, line 43).

14. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,344,402 to Sekiya in view of U.S. Patent No. 3,936,204 to Jennrich as

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applied to claims 1 and 5-7 above, and further in view of U.S. Patent No. 3,766,638 to Moore ('638).

15. With respect to claim 2, Sekiya discloses a method of dicing a workpiece (column 3, line 55-column 4, line 43). However, Sekiya does not disclose the expanding step includes a step of heating and stretching said adhesive sheet.

16. As to claim 2, Moore ('638) discloses the expanding step includes a step of heating and stretching said adhesive sheet (column 3, lines 23-25 and lines 45-47). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the heating step of Moore ('638) with the stretching step of Sekiya. The motivation would have been to put a permanent stretch into the adhesive tape, preserving interval spacing (column 3, lines 45-47)

17. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,344,402 to Sekiya in view of U.S. Patent No. 3,936,204 to Jennrich as applied to claims 1 and 5-7 above, and further in view of U.S. Patent No. 5,186,775 to Cullen et al.

18. With respect to claim 3, Sekiya discloses a method of dicing a workpiece including forming an annular protrusion in an adhesive sheet (column 3, line 55-column 4, line 43). However, Sekiya does not disclose the expansion maintaining step includes a step of welding or bonding a base of said annular protrusion of said adhesive sheet into a looped tube.

19. Jennrich discloses a tape clamp, including forming a loose looped tube in the adhesive sheet (See Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the loose part clamping taught by Jennrich with the expansion step on the method of Sekiya. The motivation would have been to prevent tape failure (column 1, lines 45-47).

20. Cullen et al. discloses a container fabrication method, including expansion maintaining step includes a step of welding or bonding a base of said protrusion of said adhesive sheet (column 3, lines 15-22; See Figures 8-10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the welding step taught by Cullen et al. with the expansion maintaining step disclosed by Sekiya. The motivation would have been to secure the edges of the adhesive film improving stabilization of the expanded sheet through immobilization.

21. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,344,402 to Sekiya in view of U.S. Patent No. 3,936,204 to Jennrich and U.S. Patent No. 5,186,775 to Cullen et al. as applied to claim 3 above, and further in view of U.S. Patent No. 6,403,921 to Maeda et al.

22. As to claim 4, Sekiya discloses a method of dicing a workpiece (column 3, line 55-column 4, line 43). However, Sekiya does not disclose the step of welding or bonding is the base of the annular protrusion formed in the adhesive sheet is performed while the chuck stage is rotated.

23. Maeda discloses a welding method, including welding is known in the art to be performed on a turntable (column 5, lines 51-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the welding step using a turntable as taught by Maeda with the chuck stage of Sekiya. The motivation would have been to allow for continuous welding (column 5, lines 51-55).

24. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,344,402 to Sekiya in view of U.S. Patent No. 3,936,204 to Jennrich as applied to claims 1 and 5-7 above, and further in view of U.S. Patent No. 6,176,966 to Tsujimoto et al.

25. With respect to claim 9, Sekiya discloses a method of dicing a workpiece (column 3, line 55-column 4, line 43). However, Sekiya does not disclose a heat-shrinkable sheet is used as said adhesive sheet, and said expanding step and said expansion maintaining step are simultaneously performed by heating said adhesive sheet in at least a pair of areas sandwiching said plate-like article in parallel with a dicing line of said plate-like article in the portion of said adhesive sheet between said plate-like article and said frame.

26. Tsujimoto et al. discloses a die bonding method, including a heat-shrinkable sheet is used as said adhesive sheet, and said expanding step and said expansion maintaining step are simultaneously performed by heating said adhesive sheet in at least a pair of areas (3; See Figure 1) sandwiching said plate-like article in parallel with a dicing line of said plate-like article in the portion of said adhesive sheet between said

plate-like article and said frame (column 2, lines 26-33). It is known in the art that stretching/tensioning a web may be performed by decreasing the amount of material over a given length, increasing the length of the web, or a combination of each to yield the predictable result of an expanded web. The substitution of one tensioning method (the heat-shrink film taught by Tsujimoto et al.) for another (the upward force expansion disclosed in Sekiya) would achieve the predictable result of forming spaces between individual chips.

27. As to claim 10, Sekiya discloses a method of dicing a workpiece (column 3, line 55-column 4, line 43). However, Sekiya does not disclose the adhesive sheet is heated in at least a pair of areas sandwiching said plate-like article in parallel with a dicing line in one direction of said plate-like article, and in at least a pair of areas sandwiching said plate-like article in parallel with a dicing line perpendicular to the dicing line in said one direction, and heating temperatures of said areas are individually controlled according to the state of increase in the spacings between said individual chips.

28. Tsujimoto et al. discloses a die bonding method, including the adhesive sheet is heated in at least a pair of areas (3; See Figure 1) sandwiching said plate-like article in parallel with a dicing line in one direction of said plate-like article, and in at least a pair of areas sandwiching said plate-like article in parallel with a dicing line perpendicular to the dicing line in said one direction, and heating temperatures of said areas are individually controlled according to the state of increase in the spacings between said individual chips (column 2, lines 26-33; column 6, lines 23-25). It is known in the art that stretching/tensioning a web may be performed by decreasing the amount of material

over a given length, increasing the length of the web, or a combination of each to yield the predictable result of an expanded web. The substitution of one tensioning method (the heat-shrink film taught by Tsujimoto et al.) for another (the upward force expansion disclosed in Sekiya) would achieve the predictable result of forming spaces between individual chips.

29. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,344,402 to Sekiya in view of U.S. Patent No. 3,936,204 to Jennrich and U.S. Patent No. 6,176,966 to Tsujimoto et al. as applied to claims 9-10 above, and further in view of U.S. Patent No. 4,688,540 to Ono.

30. With respect to claim 11, Sekiya discloses a method of dicing a workpiece (column 3, line 55-column 4, line 43). However, Sekiya does not disclose after the dicing of said plate-like article, said adhesive sheet is heated without said plate-like article being detached from said chuck stage of said dicing device.

31. Tsujimoto et al. discloses a die bonding method, including a heat-shrinkable sheet is used as said adhesive sheet, and said expanding step and said expansion maintaining step are simultaneously performed by heating said adhesive sheet in at least a pair of areas (3; See Figure 1) sandwiching said plate-like article in parallel with a dicing line of said plate-like article in the portion of said adhesive sheet between said plate-like article and said frame (column 2, lines 26-33). It is known in the art that stretching/tensioning a web may be performed by decreasing the amount of material over a given length, increasing the length of the web, or a combination of each to yield

the predictable result of an expanded web. The substitution of one tensioning method (the heat-shrink film taught by Tsujimoto et al.) for another (the upward force expansion disclosed in Sekiya) would achieve the predictable result of forming spaces between individual chips.

32. Ono discloses a dicing method, including after the dicing of said plate-like article, said adhesive sheet is transported without said plate-like article being detached from said chuck stage of said dicing device (See Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the step of conveying the attached wafer taught by Ono with the conveying step of Sekiya. The motivation would have been to allow the wafer and chips to be transported with greater efficiency and minimal disturbance.

33. Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,344,402 to Sekiya in view of U.S. Patent No. 3,790,051 to Moore ('051) and U.S. Patent No. 6,176,966 to Tsujimoto et al.

34. With respect to claim 12, Sekiya discloses a method of dicing a workpiece, including a conveying step of conveying said plate-like article (W) together with said chuck stage (21) of said dicing device to a different area in said dicing device without being detached from a chuck stage after the dicing of said plate-like article; an expanding step of expanding said adhesive sheet so as to produce spacings between individual chips with said plate-like article being mounted to said frame (F) in a wafer spreader of an expansion device; and an expansion maintaining step of maintaining in a

maximally expanded state of said adhesive sheet with the spacings between individual chips unchanged and with said plate-like article remaining mounted to said frame after said expanding step by gathering the expanded sheet formed near an outer periphery of the adhesive sheet by the expansion of the adhesive sheet to form an annular protrusion surrounding the chips by nipping and securing the annular protrusion, and conveying said plate-like article from the wafer spreader of said expansion station together with said frame with the increased spacings between said chips being maintained (column 3, line 55-column 4, lines 43; See Figures 8-9). However, Sekiya does not disclose a heat-shrinkable sheet is used as said adhesive sheet, and said expansion maintaining step includes a step of forming a loose part in a portion of said adhesive, and heating and shrinking said loose part of the expanded adhesive sheet near the outer periphery of the adhesive sheet to eliminate said loose part.

35. Moore ('051) discloses a wafer fracturing technique, including the expansion maintaining step includes a step of forming a loose part in a portion of said adhesive sheet between said plate-like article and said frame ('051; See Figure 8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a loose part as taught by Moore ('051) in the adhesive sheet of Sekiya. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the vacuum maintaining step taught by Moore ('051) with the expansion maintaining step of Sekiya. The motivation would have been to tightly form the adhesive sheet onto the surrounding frame, even after the tensioning force is eliminated.

36. Tsujimoto et al. discloses a die bonding method, including a heat-shrinkable sheet is used as said adhesive sheet (3; See Figure 1) and heating and the excess film to eliminate the excess film (column 2, lines 26-33). It is known in the art that stretching/tensioning a web may be performed by decreasing the amount of material over a given length, increasing the length of the web, or a combination of both to yield the predictable result of an expanded web. The substitution of one tensioning method (the heat-shrink film taught by Tsujimoto et al.) for another (the upward force expansion disclosed in Sekiya) would achieve the predictable result of forming spaces between individual chips.

37. As to claim 13, Sekiya discloses a method of dicing a workpiece (column 3, line 55-column 4, line 43). However, Sekiya does not disclose the loose part is formed after the expanded state of said adhesive sheet in the portion on which said expanded plate-like article is stuck is maintained by suction or mechanically, and said maintenance by suction or mechanical maintenance is released after said loose part is heated and shrunk.

38. Moore ('051) discloses a wafer fracturing technique, including the loose part is formed after the expanded state of said adhesive sheet in the portion on which said expanded plate-like article is stuck is maintained by suction or mechanically, and said maintenance by suction or mechanical maintenance is released (201; See Figure 8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a loose part as taught by Moore ('051) in the adhesive sheet of Sekiya. It would have been obvious to one of ordinary skill in the art at the time the invention was

made to combine the vacuum maintaining step taught by Moore ('051) with the expansion maintaining step of Sekiya. The motivation would have been to tightly form the adhesive sheet onto the surrounding frame, even after the tensioning force is eliminated.

39. Tsujimoto et al. discloses a die bonding method, including a heat-shrinkable sheet is used as said adhesive sheet (3; See Figure 1) and heating and the excess film to eliminate the excess film (column 2, lines 26-33). It is known in the art that stretching/tensioning a web may be performed by decreasing the amount of material over a given length, increasing the length of the web, or a combination of both to yield the predictable result of an expanded web. The substitution of one tensioning method (the heat-shrink film taught by Tsujimoto et al.) for another (the upward force expansion disclosed in Sekiya) would achieve the predictable result of forming spaces between individual chips.

40. As to claim 14, Sekiya discloses a method of dicing a workpiece (column 3, line 55-column 4, line 43). However, Sekiya does not disclose the relative separation between said plate-like article and said frame is terminated to form said loose part.

41. Moore ('051) discloses a wafer fracturing technique, including the loose part is formed when relative separation between said plate-like article and said frame is terminated (201; See Figure 8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a loose part as taught by Moore ('051) in the adhesive sheet of Sekiya. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the vacuum maintaining

step taught by Moore ('051) with the expansion maintaining step of Sekiya. The motivation would have been to tightly form the adhesive sheet onto the surrounding frame, even after the tensioning force is eliminated.

42. As to claim 15, Sekiya discloses said adhesive sheet is pressed between said plate-like article and said frame to expand said adhesive sheet (See Figure 8).

However, Sekiya does not disclose the press of said adhesive sheet between said plate-like article and said frame is released to form said loose part.

43. Moore ('051) discloses a wafer fracturing technique, including the press of said adhesive sheet between said plate-like article and said frame is released to form said loose part (201; See Figure 8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a loose part as taught by Moore ('051) in the adhesive sheet of Sekiya. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the vacuum maintaining step taught by Moore ('051) with the expansion maintaining step of Sekiya. The motivation would have been to tightly form the adhesive sheet onto the surrounding frame, even after the tensioning force is eliminated.

44. As to claim 16, Sekiya discloses a method of dicing a workpiece (column 3, line 55-column 4, line 43). However, Sekiya does not disclose portion of said adhesive sheet outside said plate-like article is heated in a ring shape to shrink said loose part.

45. Tsujimoto et al. discloses a die bonding method, including a portion of said adhesive sheet outside said plate-like article is heated in a ring shape to shrink said loose part (3; See Figure 1). It is known in the art that stretching/tensioning a web may

be performed by decreasing the amount of material over a given length, increasing the length of the web, or a combination of both to yield the predictable result of an expanded web. The substitution of one tensioning method (the heat-shrink film taught by Tsujimoto et al.) for another (the upward force expansion disclosed in Sekiya) would achieve the predictable result of forming spaces between individual chips.

46. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,344,402 to Sekiya in view of U.S. Patent No. 3,790,051 to Moore ('051) and U.S. Patent No. 6,176,966 to Tsujimoto et al. as applied to claims 12-16 above, and further in view of U.S. Patent No. 4,688,540 to Ono.

47. As to claim 17, Sekiya discloses the adhesive sheet is expanded (column 3, line 55-column 4, lines 43). However, Sekiya does not disclose after the dicing of said plate-like article, said adhesive sheet is expanded without said plate-like article being detached from said chuck stage of said dicing device.

48. Ono discloses a dicing method, including after the dicing of said plate-like article, said adhesive sheet is transported without said plate-like article being detached from said chuck stage of said dicing device (See Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the step of conveying the attached wafer taught by Ono with the conveying step of Sekiya. The motivation would have been to allow the wafer and chips to be transported with greater efficiency and minimal disturbance.

49. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,344,402 to Sekiya in view of U.S. Patent No. 3,936,204 to Jennrich, U.S. Patent No. 6,383,606 to Broyles and U.S. Patent No. 6,176,966 to Tsujimoto et al.

50. With respect to claim 18, Sekiya discloses a method of dicing a workpiece, including a conveying step of conveying said plate-like article (W) together with said chuck stage (21) of said dicing device to a different area in said dicing device without being detached from a chuck stage after the dicing of said plate-like article; an expanding step of expanding said adhesive sheet so as to produce spacings between individual chips with said plate-like article being mounted to said frame (F) in a wafer spreader of an expansion device; and an expansion maintaining step of maintaining in a maximally expanded state of said adhesive sheet with the spacings between individual chips unchanged and with said plate-like article remaining mounted to said frame after said expanding step by gathering the expanded sheet formed near an outer periphery of the adhesive sheet by the expansion of the adhesive sheet to form an annular protrusion surrounding the chips by nipping and securing the annular protrusion, and conveying said plate-like article from the wafer spreader of said expansion station together with said frame with the increased spacings between said chips being maintained (column 3, line 55-column 4, lines 43; See Figures 8-9) and includes a step of relatively vertically separating said plate-like article and said frame and expansion maintaining step includes a step of sticking a different ring-shaped frame to said expanded adhesive sheet (column 3, line 55-column 4, line 43). Sekiya does not specifically disclose forming a loose part of the adhesive sheet, applying a lateral force

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to said adhesive sheet, or cutting said adhesive sheet near an outer periphery of said different frame.

51. Jennrich discloses a tape clamp, including forming a loose part in the adhesive sheet (See Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the loose part clamping taught by Jennrich with the expansion step on the method of Sekiya. The motivation would have been to prevent tape failure (column 1, lines 45-47). However, Sekiya does not specifically disclose applying a lateral force to said adhesive sheet, or cutting said adhesive sheet near an outer periphery of said different frame.

52. Broyles discloses a method of expanding wafers, including applying a lateral force to said adhesive sheet (See Figures 6-7). It is known in the art that stretching/tensioning a web may be performed by decreasing the amount of material over a given length, increasing the length of the web, or a combination of both to yield the predictable result of an expanded web. The substitution of one tensioning method (the lateral force expansion taught by Broyles) for another (the upward force expansion disclosed in Sekiya) would achieve the predictable result of forming spaces between individual chips.

53. Tsujimoto et al. discloses a die bonding method, including cutting said adhesive sheet near an outer periphery of said different frame outwardly of a position at which the adhesive sheet is held (3; See Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the excess sheet material cutting step taught by Tsujimoto et al. with the method of Sekiya. The motivation would

have been to reduce the bulk of the resulting article, allowing more efficient transport and storage.

54. As to claim 19, Sekiya discloses a method of dicing a workpiece (column 3, line 55-column 4, line 43). However, Sekiya does not disclose the lateral force applied to said adhesive sheet is applied by inflating an airbag.

55. Broyles discloses a method of expanding wafers, including the lateral force applied to said adhesive sheet is applied by inflating an airbag (See Figures 6-7). It is known in the art that stretching/tensioning a web may be performed by decreasing the amount of material over a given length, increasing the length of the web, or a combination of both to yield the predictable result of an expanded web. The substitution of one tensioning method (the lateral force expansion taught by Broyles) for another (the upward force expansion disclosed in Sekiya) would achieve the predictable result of forming spaces between individual chips.

56. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,344,402 to Sekiya in view of U.S. Patent No. 3,936,204 to Jennrich, U.S. Patent No. 6,383,606 to Broyles and U.S. Patent No. 6,176,966 to Tsujimoto et al. as applied to claims 18-19 above, and further in view of U.S. Patent No. 3,766,638 to Moore ('638).

57. As to claim 20, Sekiya discloses a method of dicing a workpiece (column 3, line 55-column 4, line 43). However, Sekiya does not disclose the different ring is the same size as the frame.

58. Moore ('638) discloses it is known in the art to use ring of the same size as clamping members (5/11; See Figure 2). It is inherent the different ring (column 4, lines 2-10) would be of the same type and dimensions as the first ring (5/11), in order to tightly fit around the button (18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the same sized rings taught by Moore ('638) with the method of Sekiya. The motivation would have been to prevent mechanical shock during transport (column 4, lines 2-10).

Response to Arguments

59. Applicant's arguments with respect to claims 1-7 and 9-20 have been considered but are moot in view of the new ground(s) of rejection. Applicant's remaining pertinent arguments are addressed below:

60. With respect to applicant's assertion that Sekiya discloses removing the stretching ring 26 causes "adjacent pellets to come close together", examiner disagrees. Examiner was unable to locate the specified passage cited by applicant as stating removal of the ring 26 causes adjacent pellets to come closer together. Sekiya specifically discloses "The frame F is released from the frame holder 22, and then, the wafer-and-frame combination is released from the holding-and-carrying section 20. The wafer-and-frame combination has adjacent pellets separated apart from each other on its expanded adhesive tape T. Thus, there is no fear for physical interference between adjacent pellets, which physical interference would cause undesired cracks on the confronting edges of adjacent pellets while being carried to subsequent

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manufacturing station." Column 4, lines 32-36. Consequently, applicant's assertion that Sekiya specifically discloses bringing the pellets closer together is unsupported. Therefore, the amendment is not found to overcome the current 102 (b) and 103 (a) rejections.

Conclusion

61. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIMBERLY K. MCCLELLAND whose telephone number is (571)272-2372. The examiner can normally be reached on 8:00 a.m.-5 p.m. Mon-Thr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip C. Tucker can be reached on (571)272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Kimberly K McClelland/
Examiner, Art Unit 1791

KKM